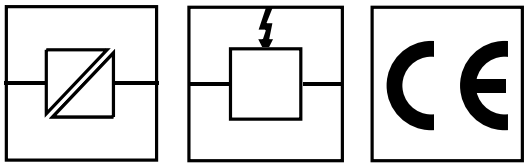
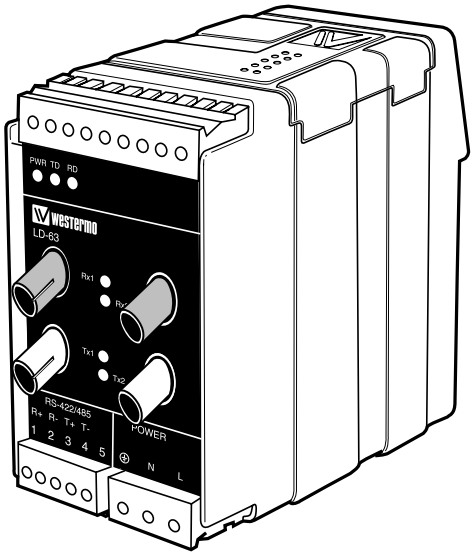
LD-63 AC
LD-63 DC

INSTALLATIONSANVISNING
INSTALLATION MANUAL
INSTALLATIONS ANLEITUNG
MANUEL D'INSTALLATION

6072-2004



Galvanic Isolation | Transient Protection | CE Approved



Linjedelare, optisk fiber
– RS-232/V.24, RS-422/485

Line sharing device, fibre optic
– RS-232/V.24, RS-422/485

Glasfaser Leitungsteiler
RS-232/V.24, RS-422/485

Convertisseur Multipoint
RS232/422/485 – Fibre Optique

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Specifikationer LD-63

Överföring	Asynkront*, full/halv duplex eller simplex
Gränssnitt 1	EIA RS-232/ITU-T V.24 9-polig frånskiljbar skruvplint EIA RS-422/RS-485/ ITU-T V.11 5-polig frånskiljbar skruvplint
Gränssnitt 2	4 ST-kontakter, se tabell för effektbudget
Överföringshastighet	Upp till 115,2 kbit/s (RS-232) Upp till 1,5 Mbit/s (RS-422/485)
Lysdioder	Power, TD, RD, TX1, TX2, RX1, RX2
Temperaturområde	5–50°C, omgivningstemperatur
Fuktighetsområde	0–95% RH utan kondensation
Mått	55x100x128 mm (BxHxD)
Vikt	0,6 kg AC / 0,3 kg DC
Montering	På 35 mm DIN-skena

Matningsalternativ

Modellbeteckning	LD-63 AC	LD-63 115V AC	LD-63 DC	LD-63 36–55V DC	LD-63 HV
Strömförsörjning	230V AC +15/–10%	115V AC +15/–10%	24V DC +50/–50%	48V DC +15/–25%	95–240 V AC±10% 110–240 V AC±10%
Frekvens	48–62Hz	48–62Hz	–	–	48–62Hz / –
Säkring, F2	100mA S 5x20 mm Littelfuse	100mA S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1A T Wickmann
Effektförbrukning	20mA	40mA	3W	3W	40mA
Isolationsspänning RMS	3 000V	3 000V	1 500V	1 500V	3 750V

* *Synkront protokoll kan överföras under vissa förutsättningar.*
Se beskrivning "Val av antal bitar" sid 4.

Funktionsbeskrivning LD-63

LD-63 är en linjedelare som möjliggör att bygga upp ett multidropp-nät via fiber där den anslutna utrustningen antingen kan ha RS-422/485 eller RS-232/V.24 .
Modemet består av 2 fiberkanaler med en sändare respektive mottagare för vardera kanalen TX1, TX2, RX1 och RX2. På frontpanelen finns dessutom 7 st lysdioder som ger indikering av datatrafiken på kanalerna. De båda fiberkanalernas ingångar är transparanta vilket betyder att inkommande data på RX1 ej kodas av utan sänds vidare av TX2 och inkommande data på RX2 sänds vidare av TX1. LD-63 gör det möjligt att sända och ta emot RS422/485 och RS-232/V.24, men inkommande data på gränssnitten kommer att överlagras om data sänds samtidigt till gränssnitt RS-232/V.24 och RS-422/485.
Antalet LD-63 som kan seriekopplas är begränsat. Se tabell sid 4.

Effektbudget

Min. budget

	Enhet		
Fiber	**820 nm**	**1300 nm**	**singelmod**
50/125	10,7 dB	8,1 dB	
62,5/125	14,5 dB	11,6 dB	
100/140	20,6 dB		
9/125			6,3 dB

Typ. budget

	Enhet		
Fiber	**820 nm**	**1300 nm**	**singelmod**
50/125	16,6 dB	14,6 dB	
62,5/125	18,6 dB	15,1 dB	
100/140	25,9 dB		
9/125			12,3 dB

”Min. budget” anger garanterat minsta effektbudget. Erfarenheten visar dock att värdet oftast ligger i nivå med angivet ”Typ. budget”.

Förluster i fiberoptisk kabel

Nedan angivna värden kan variera beroende på kvalité och fabrikat på den fiberoptiska kabeln.

Fiber	Dämpning vid 820 nm	Dämpning vid 1300 nm	Dämpning vid singelmod (1300 nm)
50/125 µm	3,0 dB/km	1,0 dB/km	
62,5/125 µm	3,5 dB/km	1,2 dB/km	
100/140 µm	4,0 dB/km		
9/125 µm			0,5 dB/km

Förluster i kontakter

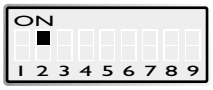
0,2–0,4 dB

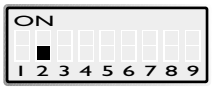
Förluster i skarv

Svetsad	0,1 dB
Mekanisk	0,2 dB

Inställningar LD-63

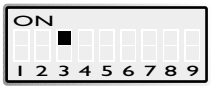
Val av V eller Y funktion

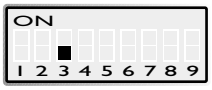
S1  Y

S1  V

V-funktion respektive Y-funktion enligt bild sid 5.

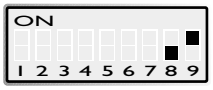
Val av retiming funktion

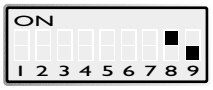
S1  Retiming

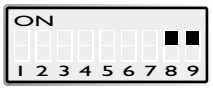
S1  Retiming av

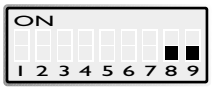
Retiming funktionen beräknar exakt bitlängd utgående från inställd hastighet och återskapar därifrån signalen vilket gör att fler enheter kan kopplas i serie. Retiming fungerar ***endast*** *för angivna hastigheter. För ej angivna hastigheter (t ex 1,2 Mbit/s) ska retiming inte användas.*

Val av antal bitar

S1  9

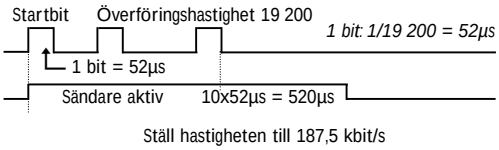
S1  10

S1  11

S1  *

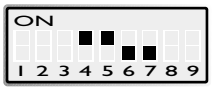
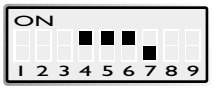
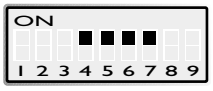
**) Använd denna inställning för synkrona protokoll. Sändaren är aktiv fr o m första databiten till 10 bittider efter den sista höga databiten (se exempel nedan). Hastigheten ställs till ≅10 ggr den önskade kommunikationshastigheten.*

Exempel 19 200 bit/s



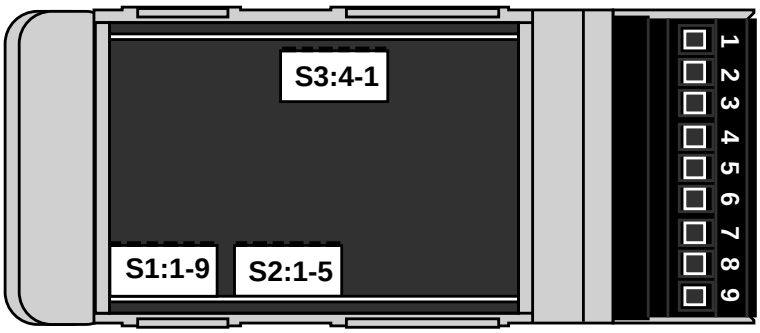
Ställ hastigheten till 187,5 kbit/s

Överföringshastighet/Vändtid/ Antal enheter i serie

	Vänd-tid	Överförings-hastighet	Antal* enheter
S1	0,4 ms	2 400 bit/s	20
S1 	0,2 ms	4 800 bit/s	20
S1	0,1 ms	9 600 bit/s	20
S1	75 µs	14 400 bit/s	20
S1	50 µs	19 200 bit/s	20
S1 	37 µs	28 800 bit/s	20
S1	25 µs	38 400 bit/s	20
S1	16 µs	62 500 bit/s	20
S1	11 µs	93 750 bit/s	20
S1	9 µs	115,2 kbit/s	15
S1	6 µs	187,5 kbit/s	10
S1	3 µs	375 kbit/s	5
S1	2 µs	500 kbit/s	20
S1 	1 µs	1,0 Mbit/s	10
S1	0,7 µs	1,5 Mbit/s	4
		Möjlig retiming	

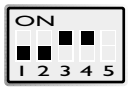
*) För ett större antal enheter kontakta Westermo

Vid användande av RS-232 är det inte nödvändigt att konfigurera antal bitar samt överföringshastighet. RS-232 gränssnittet kan hantera överföringshastigheter från 0 upp till 115,2 kbit/s.



Terminering med fail-safe

S2 Terminerad (2-tråd)

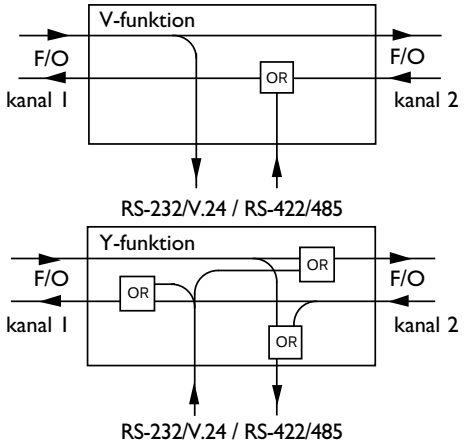
S2  Terminerad (4-tråd)

S2 Ingen terminering

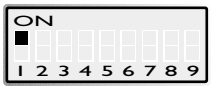
Fail-safe funktionen gör att mottagaren alltid uppfattar signaltillståndet OFF då inkopplad sändare har tillståndet tri-state (sändare ej aktiverad).
Terminering skall kopplas in på mottagaren belägen längst bort från sändaren.

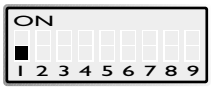
Översiktstabell vid val av databitar							
7 bitar	●	●	●		●		
8 bitar				●		●	●
Ingen paritet	●	●		●		●	
Paritet			●		●		●
1 stopp bit	●		●	●			●
2 stopp bitar		●			●	●	
Antal bitar	9	10	10	10	11	11	11

Beskrivning V/Y-funktion



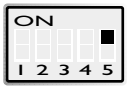
Val av 2- eller 4-tråd

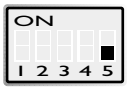
S1  4-tråd

S1  2-tråd

Val av 2-tråd RS-485 eller 4-tråd RS-422.
Vid RS-232/V.24 används inte S1:1.

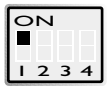
Uteffekt kanal 1

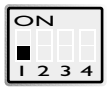
S2  Låg

S2  Hög

Normalt används hög uteffekt. Låg uteffekt används vid fiberlängder under 100 meter.

Uteffekt kanal 2

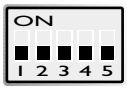
S3  Låg

S3  Hög

Normalt används hög uteffekt. Låg uteffekt används vid fiberlängder under 100 meter. S3: 2–4 används ej.

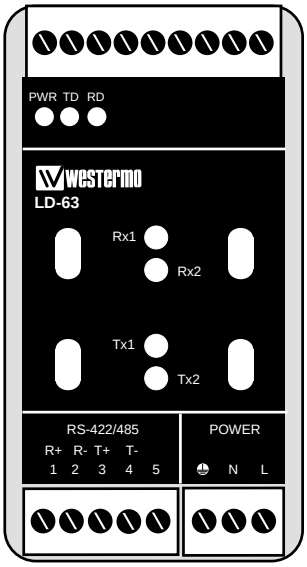
Fabriksinställning

S1

S2 

S3

Anslutningar LD-63



Linjeanslutning

(5-polig skruvplint)

Riktning	Anslutnings nr.	ITU-T V.11 Benämning
Mottagare	1	A' (R+)
Mottagare	2	B' (R–)
Sändare	3	A (T+)
Sändare	4	B (T–)
	5	Skärm

Definitionen R+/R–, T+/T– kan variera mellan olika tillverkare.

Terminalanslutning (DCE)

(RS-232-C/V.24, 9-polig skruvplint)

Riktning	Skruvplint nr.	ITU-T V.24 Benämning	Beskrivning
I	8	103	TD/Transmitted Data
O	7	104	RD/Received Data
–	9	102	SG/Signal Ground

I = Ingång **O** = Utgång på LD-63

Matningsanslutning LD-63 AC

(3-polig skruvplint)

Anslutnings-nr.	Spännings-anslutning
L N	115*/230V AC matning
⏚	Skyddsjord

** LD-63 115V*

Matningsanslutning LD-63 DC

(2-polig skruvplint)

Anslutnings-nr.	Spännings-anslutning
1	– Spänning
2	+ Spänning

Matningsanslutning LD-63 HV

(3-polig skruvplint)

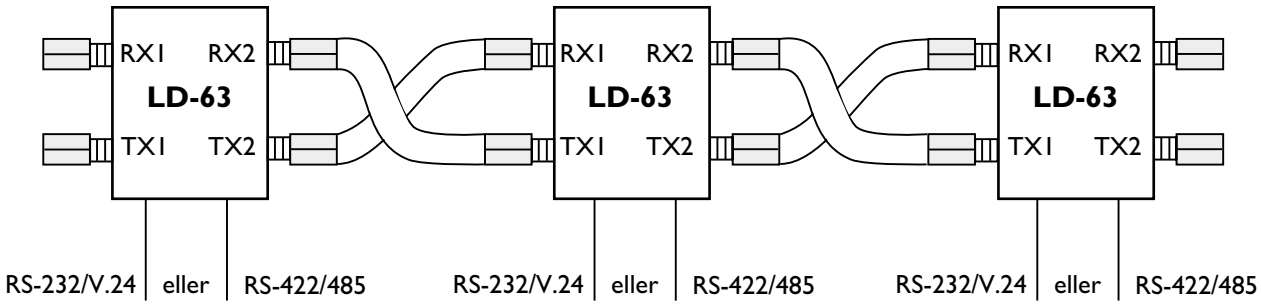
Anslutnings-nr.	Spännings-anslutning
L N	+ Spänning – Spänning
⏚	Skyddsjord

Lysdiodindikeringar LD-63

- PWR: Indikerar att enheten är spänningssatt.
- TD: Indikerar mottagen data på RS-232/V.24, RS-485 sidan.
- RD: Indikerar sänd data på RS-232/V.24, RS-485 sidan.
- Rx1: Indikerar mottagen data på fiberkanal 1.
- Rx2: Indikerar mottagen data på fiberkanal 2.
- Tx1: Indikerar sänd data på fiberkanal 1 från RS-232/V.24, RS-485 sidan.
- Tx2: Indikerar sänd data på fiberkanal 2 från RS-232/V.24, RS-485 sidan.

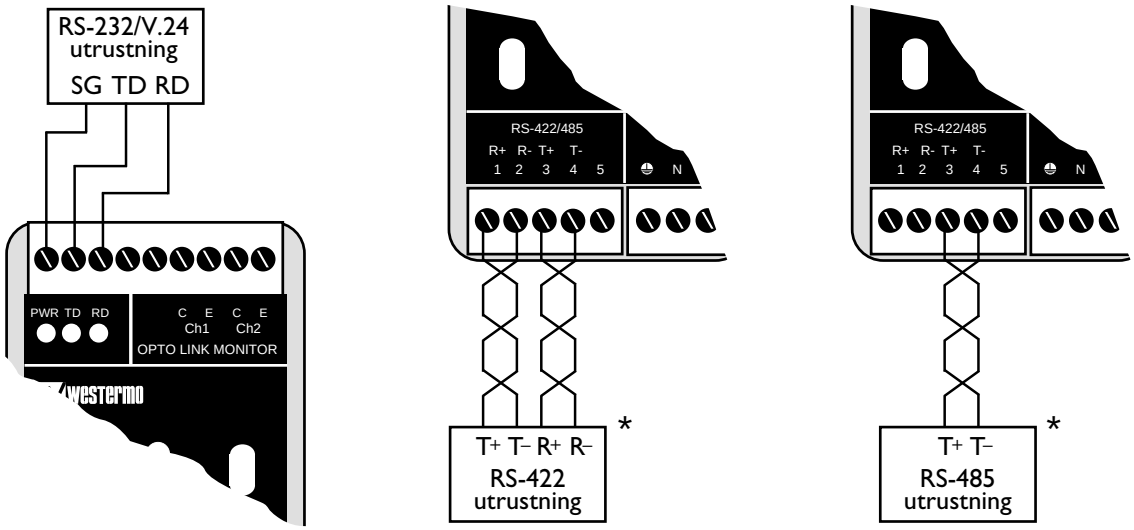
Anslutningsexempel

Fiberanslutning



OBS! När en multidroppslinga avslutas med en LD-63 och fiberparet ansluts på kanal 2 måste S1:2 stå i läge ON (Y-funktion)

Anslutning RS-232/V.24, RS-422, RS-485



*) Benämningarna T+, T–, R+, R– är inte standardiserade och kan variera mellan olika tillverkare. Första steget vid felsökning bör alltid vara att skifta respektive kabelpar (byt T+ med T– och/eller R+ med R–. Observera att kablarna endast ska skiftas i ena änden.

Specifications LD-63

Transmission Asynchronous*, full/half duplex or simplex

Interface 1 EIA RS-232/ITU-T V.24
9-position detachable screw-terminal
EIA RS-422/RS-485/ITU-T V.11
5-position detachable screw-terminal

Interface 2 4 ST-connectors, see table of power budget

Indicators Power, TD, RD, TX1, TX2, RX1, RX2

Data rates Up to 115,2 kbit/s (RS-232)
Up to 1.5 Mbit/s (RS-422/485)

Temperature range 5–50°C, ambient temperature

Humidity 0–95% RH without condensation

Dimension 55x100x128 mm (WxHxD)

Weight 0.6 kg AC / 0.3 kg DC

Mounting On 35 mm DIN-rail

Power supply alternatives

Model description	LD-63 AC	LD-63 115V AC	LD-63 DC	LD-63 36–55V DC	LD-63 HV
Power supply	230V AC +15/–10%	115V AC +15/–10%	24V DC +50/–50%	48V DC +15/–25%	95–240V AC±10% 110–240V DC±10%
Frequency	48–62Hz	48–62Hz	–	–	48–62Hz / –
Fuse, F2	100mA S 5x20 mm Littelfuse	100mA S 5x20 mm Littelfuse	1.6A S 5x20 mm Littelfuse	1.6A S 5x20 mm Littelfuse	1A T Wickmann
Power consumption	20mA	40mA	3W	3W	40mA
Isolation RMS	3 000V	3 000V	1 500V	1 500V	3 750V

* *Synchronous protocols can be transmitted under certain circumstances.*
See "selection of bits" page 10.

Description LD-63

The LD-63 is a line splitter designed for use in multi-drop fibre optic neworks. The LD-63 allows the conversion between RS-422/485, RS-232/V.24 and fibre optic. The LD-63 consists of two F/O channels, each with its separate transmitter and receiver (TX1, TX2, RX1and RX2) On the front of the unit there are seven LED's indicating the datatransmission on the channels.

The fibre optic interface is transparent which means that data received on RX1 is retransmitted on TX2 and data received on RX2 on TX1. The LD-63 allows communication on both RS-422/485 and RS-232/V.24 but data should never be transmitted to both RS-422/485 and RS-232/V.24 at the same time as it will be oversampled and be impossible to read correctly.
The number of LD-63's that can be connected in series is limited. See chart on page 11.

Power budget

Min. budget

Fibre	Unit		
	820 nm	1300 nm	single mode
50/125	10.7 dB	8.1 dB	
62.5/125	14.5 dB	11.6 dB	
100/140	20.6 dB		
9/125			6.3 dB

Typ. budget

Fibre	Unit		
	820 nm	1300 nm	single mode
50/125	16.6 dB	14.6 dB	
62.5/125	18.6 dB	15.1 dB	
100/140	25.9 dB		
9/125			12.3 dB

”Min. budget” states the minimum guaranteed power budget. Experience shows however that the typical value is in the range of the indicated ”Typ. budget”.

Attenuation in fibre cable

The values below can differ depending on quality and manufacturer of the fibre-optic cable.

Fibre	Attenuation at 820 nm	Attenuation at 1300 nm	Attenuation at single mode (1300 nm)
50/125 µm	3.0 dB/km	1.0 dB/km	
62.5/125 µm	3.5 dB/km	1.2 dB/km	
100/140 µm	4.0 dB/km		
9/125 µm			0.5 dB/km

Attenuation in connectors

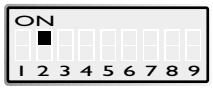
0.2–0.4 dB

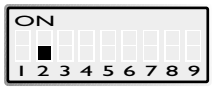
Attenuation in splice

Fusion	0.1 dB
Mechanical	0.2 dB

Switch settings LD-63

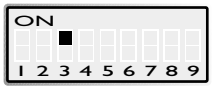
Selection of V or Y function

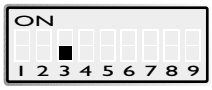
S1  Y

S1  V

V-function and Y-function are described on page 11.

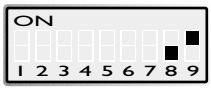
Selection of retiming function

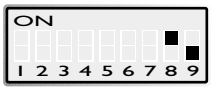
S1  Retiming

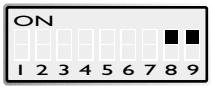
S1  Retiming of

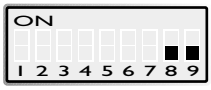
*The retiming function calculates the exact bit-length based on the speed set and recreates the signal. This allows for more units in series. The retiming works **only** for the indicated speeds. For other speeds (e g 1.2 Mbit/s) retiming can not be used.*

Selection of bits

S1  9

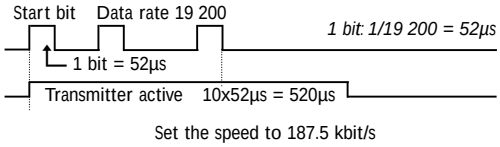
S1  10

S1  11

S1  *

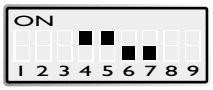
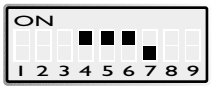
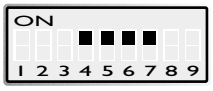
**) Use this setting for synchronous protocols.*
The transmitter will be active from the start bit to 10 bit-times after the last high databit
(see example below).
The speed shall be set to ≅10 times the required communication speed.

Example 19 200 bit/s



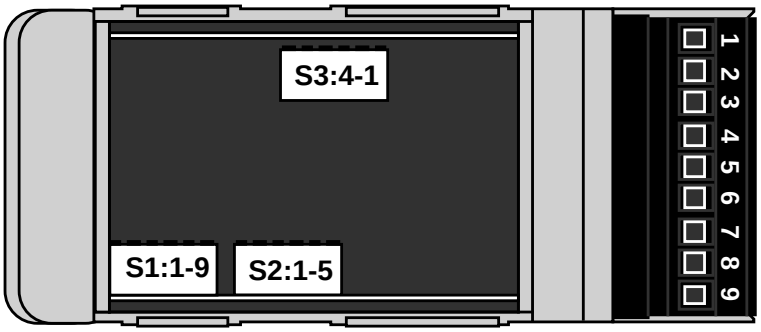
Set the speed to 187.5 kbit/s

Turning/Transmission/ Number of units connected in serie

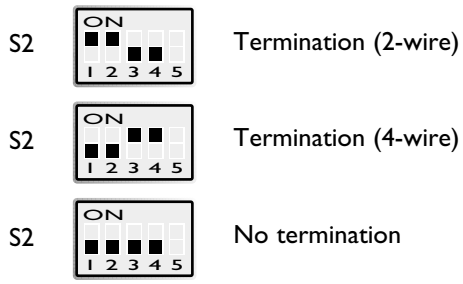
	Turning-time	Transmission rate	Number* of units
S1	0.4 ms	2 400 bit/s	20
S1 	0.2 ms	4 800 bit/s	20
S1	0.1 ms	9 600 bit/s	20
S1	75 µs	14 400 bit/s	20
S1	50 µs	19 200 bit/s	20
S1 	37 µs	28 800 bit/s	20
S1	25 µs	38 400 bit/s	20
S1	16 µs	62 500 bit/s	20
S1	11 µs	93 750 bit/s	20
S1	9 µs	115.2 kbit/s	15
S1	6 µs	187.5 kbit/s	10
S1	3 µs	375 kbit/s	5
S1	2 µs	500 kbit/s	20
S1 	1 µs	1.0 Mbit/s	10
S1	0,7 µs	1.5 Mbit/s	4
		Retiming possible	

*) For additional units please contact Westermo

When using RS-232 interface it is not necessary to select number of bits and transmission rate. The RS-232 interface can handle transmission rates from 0 up to 115.2 kbit/s.



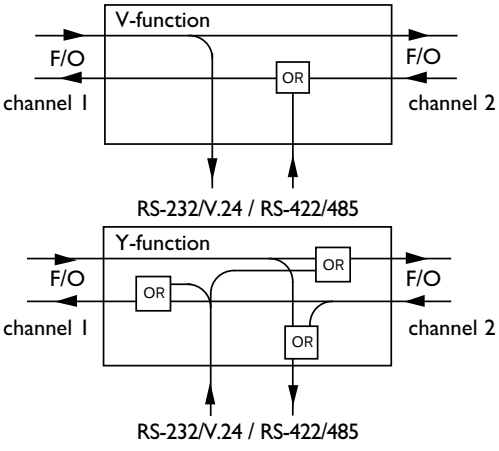
Termination with fail-safe



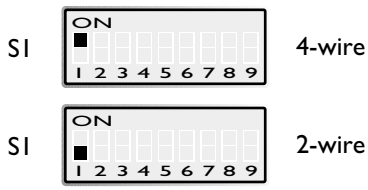
The fail-safe function forces the signal state of the receiver to OFF when the connected transmitter is in tri-state (transmitter inactive). The receiver located furthest away shall be terminated.

Supervision table when selecting data bits							
7 bits	●	●	●		●		
8 bits				●		●	●
No parity	●	●		●		●	
Parity			●		●		●
1 stop bit	●		●	●			●
2 stop bits		●			●	●	
Number of bits	9	10	10	10	11	11	11

Description V/Y-function

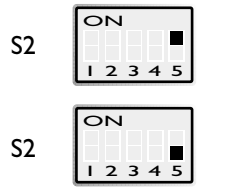


Selection of 2- or 4-wire



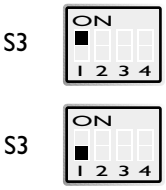
Selection of 2-wire RS-485 or 4-wire RS-422. For RS-232/V.24 S1:1 can be ignored.

Transmitted power channel 1



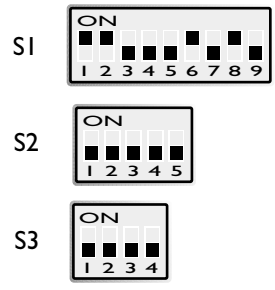
Normally high power is used. Low power is used with fibre lengths shorter than 100 m.

Transmitted power channel 2

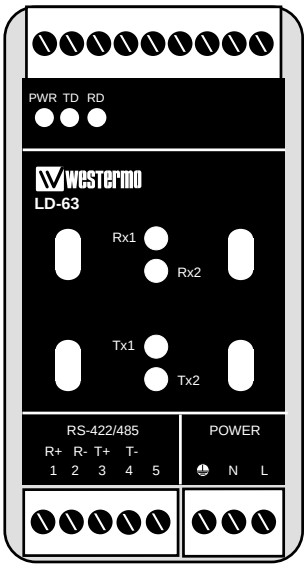


Normally high power is used. Low power is used with fibre lengths shorter than 100 m. S3: 2–4 is not used.

Factory settings



Connections LD-63



Line connection

(5-position screw-terminal)

Direction	Connection no.	ITU-T V.11 Description
Receiver	1	A' (R+)
Receiver	2	B' (R–)
Transmitter	3	A (T+)
Transmitter	4	B (T–)
	5	Shield

The definations R+/R–, T+/T– can be various between different manufactures.

Terminal connection (DCE)

(RS-232-C/V.24, 9-position screw-terminal)

Direction	Screw no.	ITU-T V.24 Description	Description
I	8	103	TD/Transmitted Data
O	7	104	RD/Received Data
–	9	102	SG/Signal Ground

I = Input **O** = Output on LD-63

Power connection LD-63 AC

(3-position screw-terminal)

Connection no.	Power supply
L N	115*/230V AC power
⏚	PE/ Protective Earth

* *LD-63 115V*

Power connection LD-63 DC

(2-position screw-terminal)

Connection no.	Power supply
1	– Voltage
2	+ Voltage

Power connection LD-63 HV

(3-position screw-terminal)

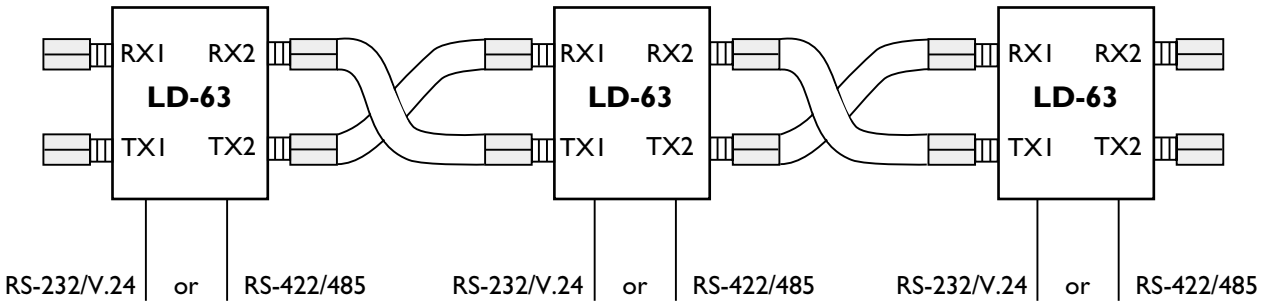
Connection no.	Power supply
L N	+ Voltage – Voltage
⏚	PE/ Protective Earth

LEDs for indication on LD-63

- PWR: Indicates that the converter has power.
- TD: Indicates that the converter is receiving data on RS-232/V.24, RS-485 side.
- RD: Indicates that the converter is sending data on RS-232/V.24, RS-485 side.
- Rx1: Indicates received data on fiber channel 1.
- Rx2: Indicates received data on fiber channel 2.
- Tx1: Indicates that the converter is sending data on fiber channel 1 from RS-232/V.24, RS-485 side.
- Tx2: Indicates that the converter is sending data on fiber channel 2 from RS-232/V.24, RS-485 side.

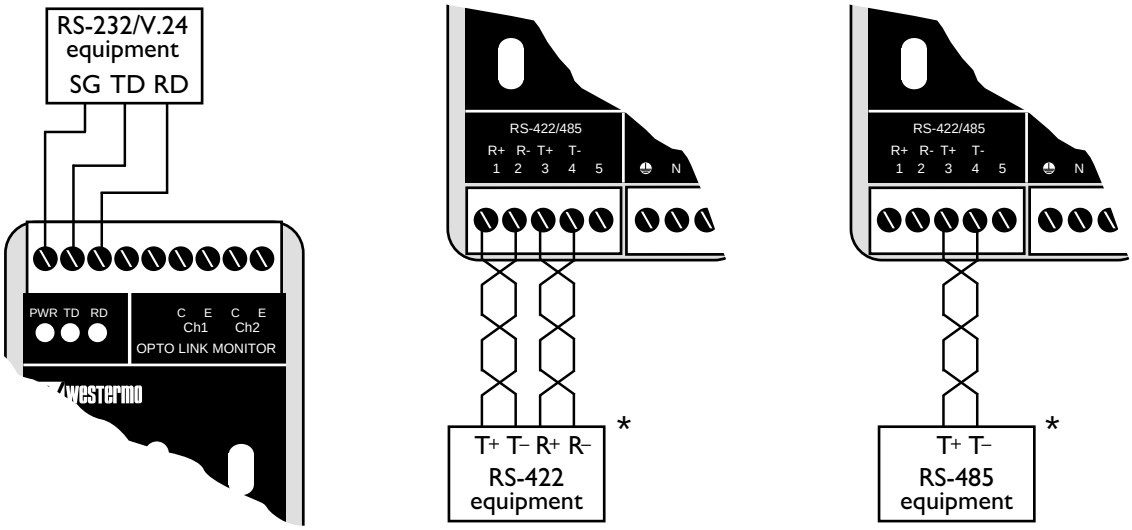
How to connect

Fibre optic connection



NB When a multidrop connection ends with an LD-63 and the fibre pair is connected on channel 2, the switch S1:2 must be set (Y-mode)

Connection of RS-232/V.24, RS-422, RS-485



*) The designations T+, T–, R+, R– are not standardised and may vary between different manufactures. The first step in fault finding is to reverse the cables (swap T+ with T– and/or R+ with R–). Please note that this should be done only at one end!

Technische Daten LD-63

Übertragungsarten	Asynchron*, Voll-/Halbduplex oder Simplex
Schnittstelle 1	EIA RS-232-C/ITU-T V.24 9 polige Schraubklemme EIA RS-422/RS-485/ITU-T V.11 5 polige Schraubklemme
Schnittstelle 2	4 ST-Anschlüsse, siehe Tabelle Dämpfung
Leuchtdioden	Betrieb, TD, RD, TX1, TX2, RX1, RX2
Übertragungsraten	bis zu 115,2 kbit/s (RS-232) bis zu 1,5 Mbit/s (RS-422/485)
Umgebungstemperatur	5–50°C
Luftfeuchtigkeit	0–95%, nicht kondensierend
Abmessungen	55x100x128 mm (BxHxT)
Gewicht	0,6 Kg AC / 0,3 Kg DC
Installation	auf 35 mm Din Schiene

Spannungsversorgung Alternativen

Modell Bezeichnung	LD-63 AC	LD-63 AC 115V	LD-63 DC	LD-63 36–55V DC	LD-63 HV
Spannungs-versorgung	230V AC +15/–10%	115V AC +15/–10%	24V DC +50/–50%	48V DC +15/–25%	95–240V AC±10% 110–240V DC±10%
Frequenz	48–62Hz	48–62Hz	–	–	48–62Hz / –
Sicherung, F2	100mA S 5x20 mm Littelfuse	100mA S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1A T Wickmann
Leistungsaufnahme	20mA	40mA	3W	3W	40mA
Isolationsspannung RMS	3 000V	3 000V	1 500V	1 500V	3 750V

* *Synchrone Protokolle können unter bestimmten Umständen übertragen werden.*
Siehe "Anzahl der Bits" Seite 16.

Beschreibung LD-63

Das LD-63 ist ein Leitungsteiler der für Multidrop Glasfasernetze entwickelt wurde. Er erlaubt die Umsetzung zwischen RS-422/485, RS-232/V.24 und Glasfaser. Das LD-63 hat 2 Glasfaser Kanäle, jeder mit separater Sende- und Empfangseinheit (TX1,TX2, RX1 und RX2). Auf der Frontplatte sind sieben LED's zur Überwachung der Datenübertragung angebracht. Die Glasfaserschnittstelle ist transparent, somit werden Daten die an RX1 empfangen werden an TX2 ausgegeben, und Daten von RX2 an TX1. Das LD-63 ermöglicht die Kommunikation mit RS-232/V.24 genauso wie mit RS-422/485, aber die Daten können nie gleichzeitig an beide Schnittstellen übertragen werden. Dies würde zu Datenverstümmelungen und inkorrekten Daten führen.
Die Anzahl der in Reihe schaltbaren LD-63 ist limitiert. Siehe Umschaltzeit Seite 16

Zulässige Dämpfung

Min. Werte

	Einheit		
Faser	**820 nm**	**1300 nm**	**Mono-mode**
50/125	10,7 dB	8,1 dB	
62,5/125	14,5 dB	11,6 dB	
100/140	20,6 dB		
9/125			6,3 dB

Typ. Werte

	Einheit		
Faser	**820 nm**	**1300 nm**	**Mono-mode**
50/125	16,6 dB	14,6 dB	
62,5/125	18,6 dB	15,1 dB	
100/140	25,9 dB		
9/125			12,3 dB

"min Werte" sind die maximal zulässigen Dämpfungen. Die Erfahrung hat jedoch gezeigt, daß die "Typ. Werte" eher zutreffen.

Dämpfungen in Glasfaserkabeln

Die genannten Werte können von Qualität und Hersteller des Glasfaserkabels variieren.

Faser	Dämpfung bei 820 nm	Dämpfung bei 1300 nm	Dämpfung bei Monomode (1300 nm)
50/125 µm	3,0 dB/km	1,0 dB/km	
62,5/125 µm	3,5 dB/km	1,2 dB/km	
100/140 µm	4,0 dB/km		
9/125 µm			0,5 dB/km

Dämpfung in Verbindern

0,2–0,4 dB

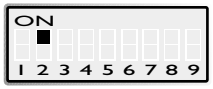
Spleißdämpfung

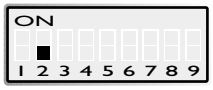
geschweißt	0,1 dB
mechanisch	0,2 dB

DIP-Schalter Einstellung

Das LD-63 bietet verschiedene Einstellmöglichkeiten zur Abstimmung auf verschiedenste Betriebsverhälnisse. Um die DIP-Schalter einzustellen muß die Gehäuseabdeckung z.B. mit Hilfe eines Schraubendrehers abgenommen werden.

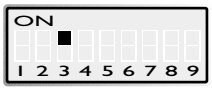
Y- oder V-Betrieb

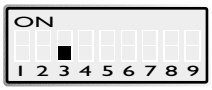
S1  Y

S1  V

V- und Y-Betrieb werden auf Seite 17 Beschrieben.

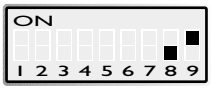
Retiming Funktion

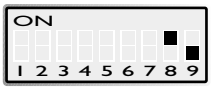
S1  Retiming

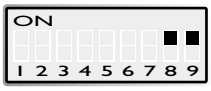
S1  Retiming AUS

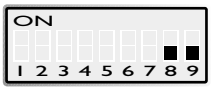
Die Retiming Funktion berechnet die exakte Bitlänge anhand der eingestellten Geschwindigkeit zur Wiederherstellung der Daten. Durch sie können mehr Geräte in Reihe geschaltet werden. Die Funktion arbeitet nur für die genannten Geschwindigkeiten. Bei z.B. 1,2Mbit/s sollte sie nicht benutzt werden.

Anzahl der Bits

S1  9

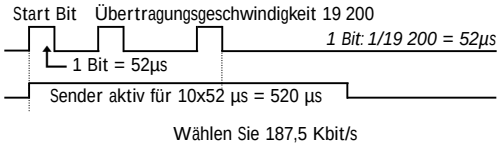
S1  10

S1  11

S1  *

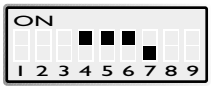
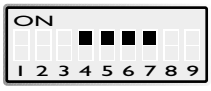
**) Benutzen Sie diese Einstellung für synchrone und andere asynchrone Protokolle. Der Sender ist aktiv ab dem Startbit. Nach dem letzten Hibit bleibt er noch für 10Bit Zeit aktiv (siehe Beispiel). Die Geschwindigkeit sollte etwa 10 mal höher der benötigten Geschwindigkeit gesetzt werden.*

Beispiel 19 200 Bit/s



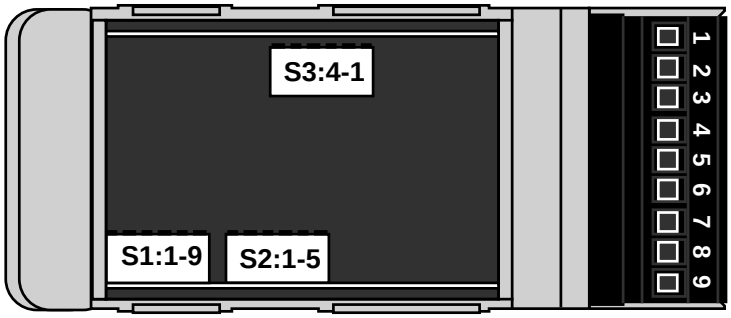
Wählen Sie 187,5 Kbit/s

Umschaltzeit/Übertragungsrate Anzahl der in Serie schaltbaren Geräte

	Umschaltzeit	Übertragungsrate	Anzahl der Geräte
S1	0,4 ms	2 400 bit/s	20
S1	0,2 ms	4 800 bit/s	20
S1	0,1 ms	9 600 bit/s	20
S1	75 µs	14 400 bit/s	20
S1	50 µs	19 200 bit/s	20
S1 	37 µs	28 800 bit/s	20
S1	25 µs	38 400 bit/s	20
S1	16 µs	62 500 bit/s	20
S1	11 µs	93 750 bit/s	20
S1	9 µs	115,2 kbit/s	15
S1	6 µs	187,5 kbit/s	10
S1	3 µs	375 kbit/s	5
S1	2 µs	500 kbit/s	20
S1 	1 µs	1,0 Mbit/s	10
S1	0,7 µs	1,5 Mbit/s	4
		Retiming möglich	

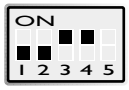
*) Fragen sie Westermo für zusätzliche Geräte

Bei Benutzung der RS-232 Schnittstelle ist es nicht notwendig die Anzahl der Bits und die Übertragungsgeschwindigkeit einzustellen. Die RS-232 Schnittstelle kann von 0 bis 115.2KBit/s eingesetzt werden.



Termination mit fail-safe

S2 2-Draht Termination

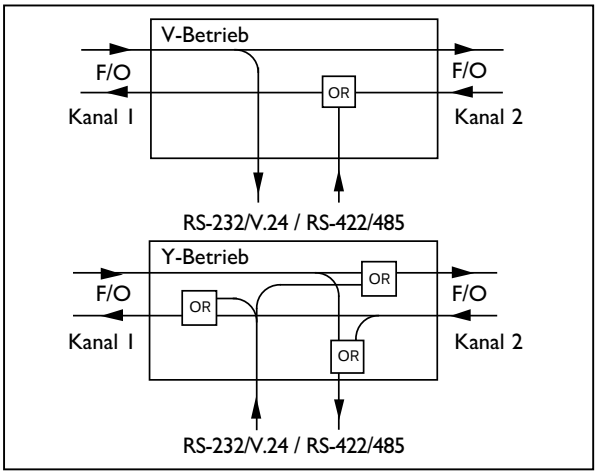
S2  4-Draht Termination

S2 keine Termination

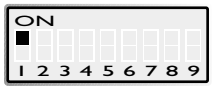
Die fail-safe Funktion zwingt den Empfänger in AUS-Zustand zu gehen, wenn der angeschlossene Sender im Tri-State Zustand ist (Sender nicht aktiv).

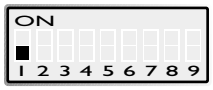
Übersichtstabelle für Datenlänge							
7 Bit	●	●	●		●		
8 Bit				●		●	●
keine Parität	●	●		●		●	
Parität			●		●		●
1 Stop Bit	●		●	●			●
2 Stop Bits		●			●	●	
Anzahl der Bits	9	10	10	10	11	11	11

Beschreibung V/Y-Betrieb



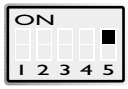
2-/4 Draht Betrieb

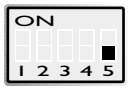
S1  4-Draht

S1  2-Draht

Einstellung für 2-Draht RS-485 oder 4-Draht RS-422. Bei RS-232/V.24. S1:1 nicht benutzt.

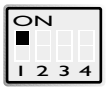
Übertragungsleistung Kanal 1

S2  niedrig

S2  hoch

Normalerweise wird die Einstellung hoch benutzt. Niedrig ist nur für Strecken kürzer als 100 m.

Übertragungsleistung Kanal 2

S3  niedrig

S3 hoch

Normalerweise wird die Einstellung hoch benutzt. Niedrig ist nur für Strecken kürzer als 100 m.
S3: 2–4 nicht benutzt.

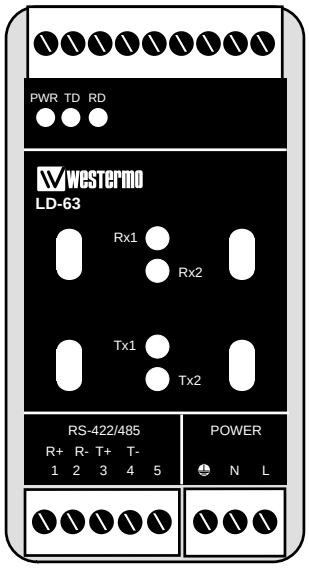
Werkseinstellungen

S1

S2

S3

Anschlüsse LD-63



Leitungsanschluß

(5-polige Schraubklemme)

Richtung	Klemme Nr.	ITU-T V.11 Bezeichnung
Empfänger	1	A' (R+)
Empfänger	2	B' (R-)
Sender	3	A (T+)
Sender	4	B (T-)
	5	Schirmung

Die Bezeichnungen R+/R–, T+/T– können abhängig vom Hersteller variieren.

Anschluß RS-232-C/V.24 DÜE

(9-polige Schraubklemme)

Richtung	Klemme Nr.	Nr.ITU-T V.24 Bezeichnung	Beschreibung
I	8	103	TD/Transmitted Data
O	7	104	RD/Received Data
–	9	102	SG/Signal Ground

I = Eingang **O** = Ausgang des LD-63

Spannungsversorgungs Anschluß LD-63 AC

(3-polige Schraubklemme)

Klemme Nr.	Spg.-Versorgung
L N	115*/230V AC Versorgung
⏚	PE/Schutzerde

* *LD-63 115V*

Spannungsversorgungs Anschluß LD-63 DC

(2-polige Schraubklemme)

Klemme Nr.	Spg.-Versorgung
1	– Pol
2	+ Pol

Spannungsversorgungs Anschluß LD-63 LV

(3-polige Schraubklemme)

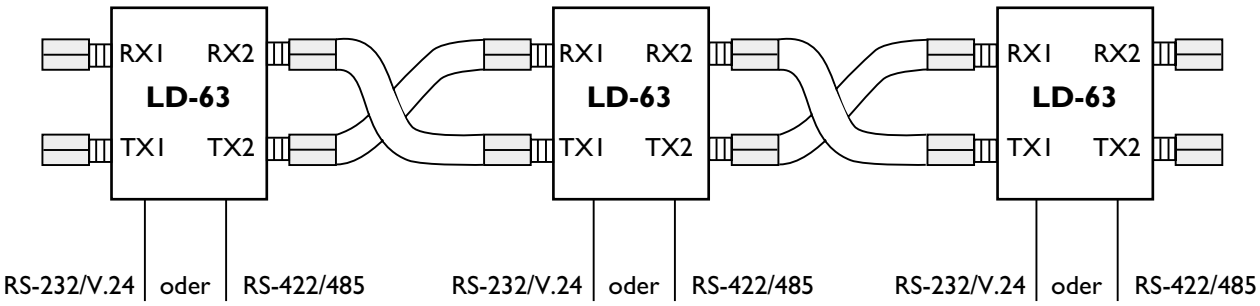
Klemme Nr.	Spg.-Versorgung
L N	+ Pol – Pol
⏚	PE/Schutzerde

LED Anzeigen des LD-63

- PWR: Anzeige für Betriebsspannung
- TD: Datenempfang an der RS-232/V.24/RS-485 Schnittstelle
- RD: Datensendung an der RS-232/V.24/RS-485 Schnittstelle
- Rx1: Datenempfang an Glasfaserschnittstelle 1
- Rx2: Datenempfang an Glasfaserschnittstelle 2
- Tx1: RS-232/V.24/485 Datensendung auf Glasfaserschnittstelle 1
- Tx2: RS-232/V.24/485 Datensendung auf Glasfaserschnittstelle 2

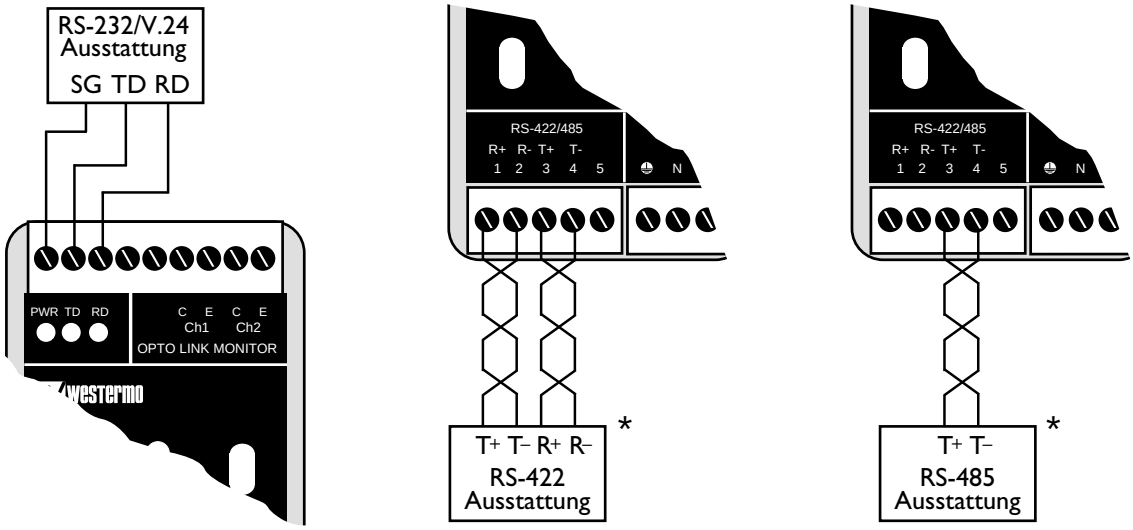
Beispiel: Multidrop

Anschluß RS-232/V.24, RS-422, RS-485



Bem.: Wenn eine Multidropverbindung mit einem LD-63 endet, und die Glasfaser an Kanal 2 angeschlossen ist, so muß der DIP Schalter S1:2 gesetzt sein (Y-Betrieb).

Anschluß RS-232/V.24, RS-422, RS-485



*) Die Bezeichnungen T+, T–, R+, R– sind kein Standard und können Herstellerabhängig variieren. Der erste Schritt bei einer Fehlersuche ist die Leitungen zu drehen, T+ mit T– und/oder R+ mit R–. Dies sollte nur an einem Ende getan werden.

Spécifications LD-63

Transmission	Asynchrone*, full/half duplex ou simplex
Interface 1	EIA RS-232/ITU-T V.24 Bornier à vis débrochable 9 points EIA RS-422/485 /ITU-T V.11 Bornier à vis débrochable 5 points
Interface 2	4 connecteurs –ST, voir le tableau du budget fibre optique.
Vitesse	Jusqu'à 115,2 kbits/s (RS-232-C), Jusqu'à 1,5 Mbit/s (RS-422/485)
Indicateurs LED	Power, TD, RD,TX1,TX2,RX1,RX2
Gamme température	5–50°C température ambiante
Humidité	0–95% RH non condensé
Dimensions	55x100x128 mm (LxHxP)
Poids	AC 0,6 kg / DC 0,3 kg
Fixation	Sur Rail DIN 35 mm

Tableau des différentes versions d'alimentation

Référence Modèle	LD-63 AC	LD-63 115V AC	LD-63 DC	LD-63 36–55V DC	LD-63 HV
Tension d'alimentation	230V AC +15/–10%	115V AC +15/–10%	24V DC +50/–50%	48V DC +15/–25%	95–240V AC±10% 110–240V DC±10%
Fréquence	48–62Hz	48–62Hz	–	–	48–62Hz / –
Fusible, F2	100mA S 5x20 mm Littelfuse	100mA S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1,6A S 5x20 mm Littelfuse	1A T Wickmann
Consommation	20mA	40mA	3W	3W	40mA
Isolation RMS	3 000V	3 000V	1 500V	1 500V	3 750V

* *Les protocoles Synchrones peuvent être transmis dans certaines conditions.*
voir Page 4 « sélection des bits »

Description fonctionnelle LD-63

Le LD-63 est un convertisseur fibre optique à partage de ligne permettant de réaliser un réseau fibre optique multipoint. Le LD-63 effectue la conversion entre l'interface RS-232/V.24, RS-422/485 et la fibre optique. Le LD-63 possède deux canaux fibre optique constitué chacun d'une voie émission et réception séparée (TX1,TX2 et RX1,RX2).Sept LED sont disposées en face avant pour indiquer l'état des différents ports de communication.
L'interface fibre optique est transparente, cela signifie que chaque donnée reçue sur RX1 est re-transmise sur TX2 et, de même, pour les données reçues sur RX2 vers TX1. Le LD-63 permet de communiquer globalement sur les ports RS-232/V.24 et RS-422/485 mais les données ne pourront jamais être transmises simultanément sur ces 2 ports. Il en résulterait une saturation de l'interface dont la lecture serait impossible.
Le nombre total de LD-63 pouvant être connectés simultanément est limité. Se reporter à la page 22

Budget optique

Budget Mini

Equipement			
Fibre	**820 nm**	**1300 nm**	**Mono-Mode**
50/125	10,7 dB	8,1 dB	
62,5/125	14,5 dB	11,6 dB	
100/140	20,6 dB		
9/125			6,3 dB

Budget Nominal

Equipement			
Fibre	**820 nm**	**1300 nm**	**Mono-Mode**
50/125	16,6 dB	14,6 dB	
62,5/125	18,6 dB	15,1 dB	
100/140	25,9 dB		
9/125			12,3 dB

"Budget Mini" indique le coefficient minimum garanti. L'expérience montre cependant que le coefficient typique se trouve dans la colonne « Budget Nominal ».

Atténuation dans le câble fibre optique

Les valeurs indiquées ci-dessous peuvent être différentes suivant la qualité et le fabricant du câble fibre optique.

Fibre	Atténuation à 820 nm	Atténuation à 1300 nm	Atténuation en mono-mode (1300 nm)
50/125 µm	3,0 dB/km	1,0 dB/km	
62,5/125 µm	3,5 dB/km	1,2 dB/km	
100/140 µm	4,0 dB/km		
9/125 µm			0,5 dB/km

Atténuation des connecteurs

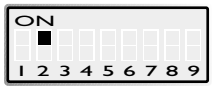
0,2–0,4 dB

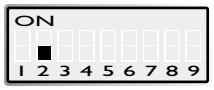
Atténuation des jonctions

Soudure	0,1 dB
Mécanique	0,2 dB

Configuration des micro-interrupteurs du LD-63

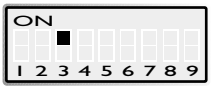
Sélection du mode V ou Y

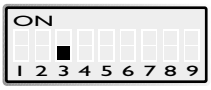
S1  Y

S1  V

Le mode V et Y sont décrits à la page 11.

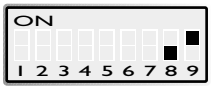
Sélection re-synchronisation

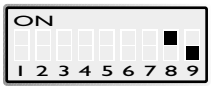
S1  Active

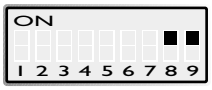
S1  Désactivée

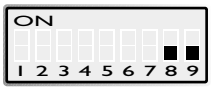
La fonction de re-synchronisation calcule la longueur exacte de chaque bit en se référant à la vitesse de transmission définie puis re-génère le signal.
La re-synchronisation ne fonctionne que pour les vitesses indiquées. Pour les autres vitesses, la re-synchronisation n'est pas utilisable.

Sélection des Bits

S1  9

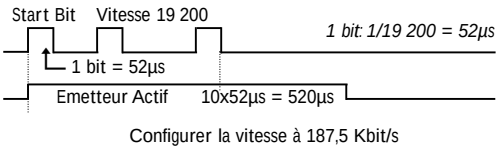
S1  10

S1  11

S1  *

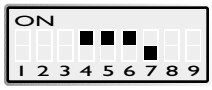
*) *Utilisez cette configuration pour des protocoles synchrones. L'émetteur deviendra actif du bit de Start pendant 10fois 10bits jusqu'au dernier bit de donnée de poids fort. (Voir l'exemple ci-dessous).*
La vitesse doit être configurée à 10 fois la vitesse de communication requise

Exemple 19 200 bit/s



Configurer la vitesse à 187,5 Kbit/s

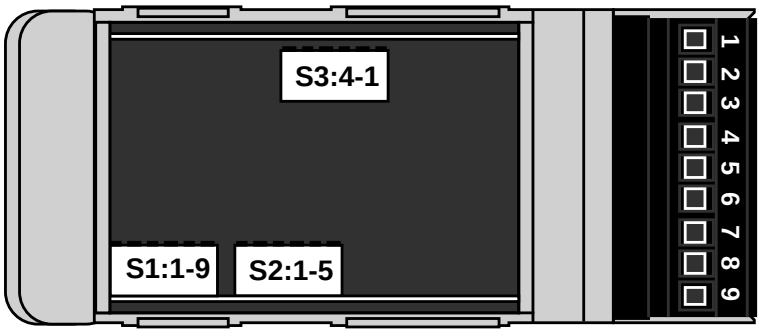
Sélection vitesse de transmission/temps de retournement /Nbre d'unités

	Temps Retournement	Vitesse* transmission	Nbre** d'unités
S1	0,4 ms	2 400 bit/s	20
S1	0,2 ms	4 800 bit/s	20
S1	0,1 ms	9 600 bit/s	20
S1	75 µs	14 400 bit/s	20
S1	50 µs	19 200 bit/s	20
S1 	37 µs	28 800 bit/s	20
S1	25 µs	38 400 bit/s	20
S1	16 µs	62 500 bit/s	20
S1	11 µs	93 750 bit/s	20
S1	9 µs	115,2 kbit/s	15
S1	6 µs	187,5 kbit/s	10
S1	3 µs	375 kbit/s	5
S1	2 µs	500 kbit/s	20
S1	1 µs	1,0 Mbit/s	10
S1	0,7 µs	1,5 Mbit/s	4

Re-synchronisation possible

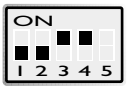
*) Pour des unités supplémentaires contacter Westermo.

Si on utilise l'interface RS-232, il n'est pas nécessaire de configurer la vitesse et le nombre de bit, car le port RS-232 sait gérer la vitesse de transmission entre 0 et 115,2 kbit/s.



Terminaison avec niveau de sécurité

S2 Terminaison (2 fils)

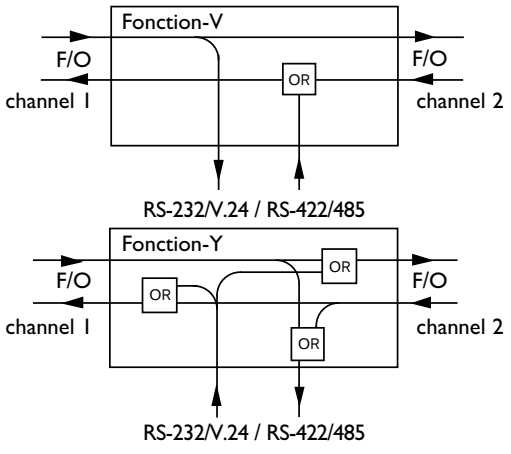
S2  Terminaison (4 fils)

S2 Pas de terminaison

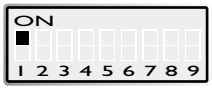
La fonction niveau de sécurité force l'état du signal récepteur sur OFF, quand l'émetteur connecté est en mode 3 états. (émetteur inactif).
Le récepteur le plus éloigné doit être équipé de la terminaison.

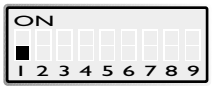
Table globale de configuration des bits de données							
7 bits	●	●	●		●		
8 bits				●		●	●
Pas de Parité	●	●		●		●	
Parité			●		●		●
1 Stop Bit	●		●	●			●
2 Stop Bits		●			●	●	
Nombre de Bits	9	10	10	10	11	11	11

Description de la fonction V/Y



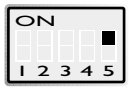
Sélection du mode 2 ou 4 fils

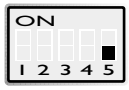
S1  4 fils

S1  2 fils

Configuration du mode 2 fils RS-485 ou 4 fils RS-422.
Si on utilise le port RS-232 cette fonction est inactive.

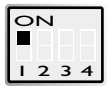
Puissance Emission canal 1

S2  Faible

S2  Forte

Normalement on utilise la puissance d'émission forte.
Par contre lorsque la longueur de la fibre est inférieure à 100 m, la puissance d'émission faible est recommandée.

Puissance Emission Canal 2

S3  Faible

S3 Forte

Normalement on utilise la puissance d'émission forte.
Par contre lorsque la longueur de la fibre est inférieure à 100m, la puissance d'émission faible est recommandée.
S3: 2–4 est non utilisé. SW3 : 2–4 sont inactifs.

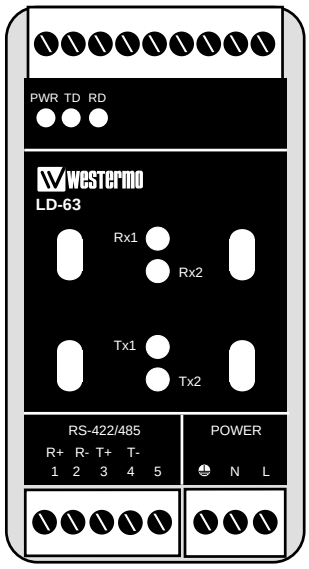
Configuration Usine

S1

S2

S3

Connexions LD-63



Connexion Ligne
(Bornier à vis 5 points)

Direction	Vis N°	ITU-T V.11 Description
Récepteur	1	A' (R+)
Récepteur	2	B' (R–)
Emetteur	3	A (T+)
Emetteur	4	B (T–)
	5	Blindage

La définition R+/R–, T+/T– peut varier suivant les différents constructeurs.

Connexion port Terminal (DCE)
(RS-232-C/V.24, Bornier à vis 9 positions)

Direction	Bornier N°	ITU-T V.24 Description	Désignation
I	8	103	TD / Donnée Transmise
O	7	104	RS / Donnée Reçue
–	9	102	SG / Masse

I = Ingång **O** = Utgång på LD-63

Connexion Alimentation LD-63 AC
(Bornier à vis 3 points)

Vis N°	Alimentation
L N	115*/230V Alternatif
⏚	Protection Terre

* *LD-63 115V*

Connexion Alimentation LD-63 DC
(Bornier à vis 2 points)

Connexion N°	Alimentation
1	– Tension
2	+ Tension

Connexion Alimentation LD-63 LV
(Bornier à vis 3 points)

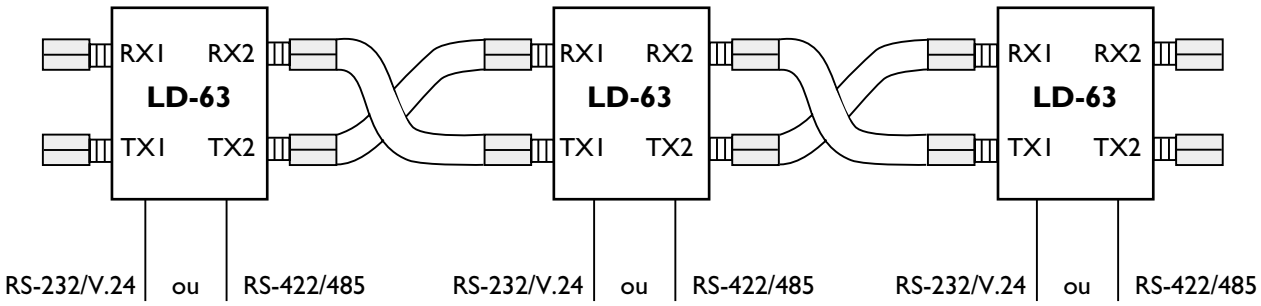
Connection N°	Power supply
L N	+ Tension – Tension
⏚	Protection Terre

Indicateurs de statut LED sur le LD-63

- PWR : l'unité est alimentée
- TD : Réception de données provenant du port RS-232/V.24,RS-422/485
- RD : Emission de données vers le port RS-232/V.24,RS-422/485
- RX1 : Réception de données sur le canal fibre N°1
- RX2 : Réception de données sur le canal fibre N°2
- TX1 : Emission de donnée sur le canal fibre N°1 (provenant du port RS-232/422/485)
- TX2 : Emission de donnée sur le canal fibre N°2 (provenant du port RS-232/422/485)

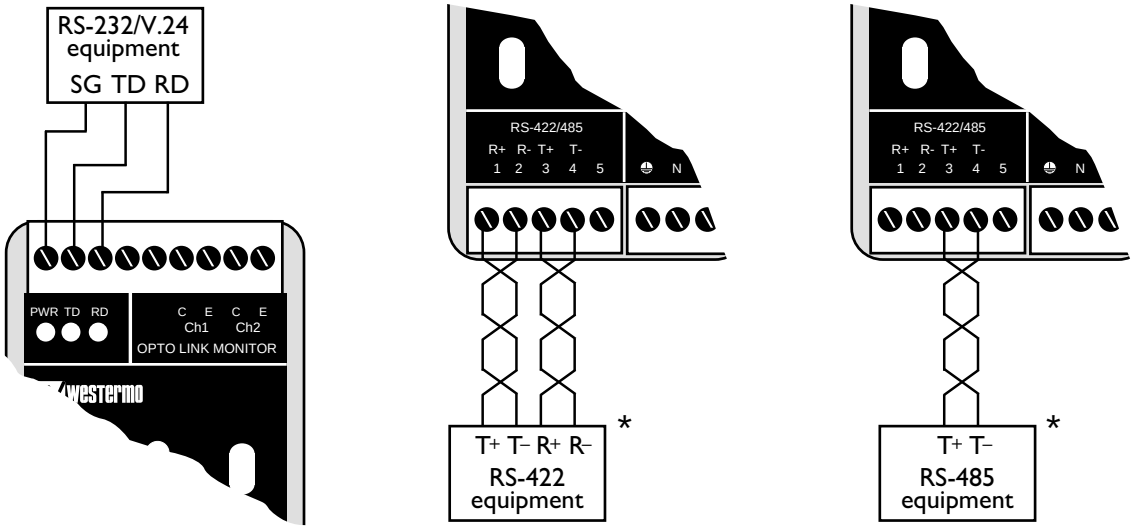
Comment se connecter

Connexions fibre



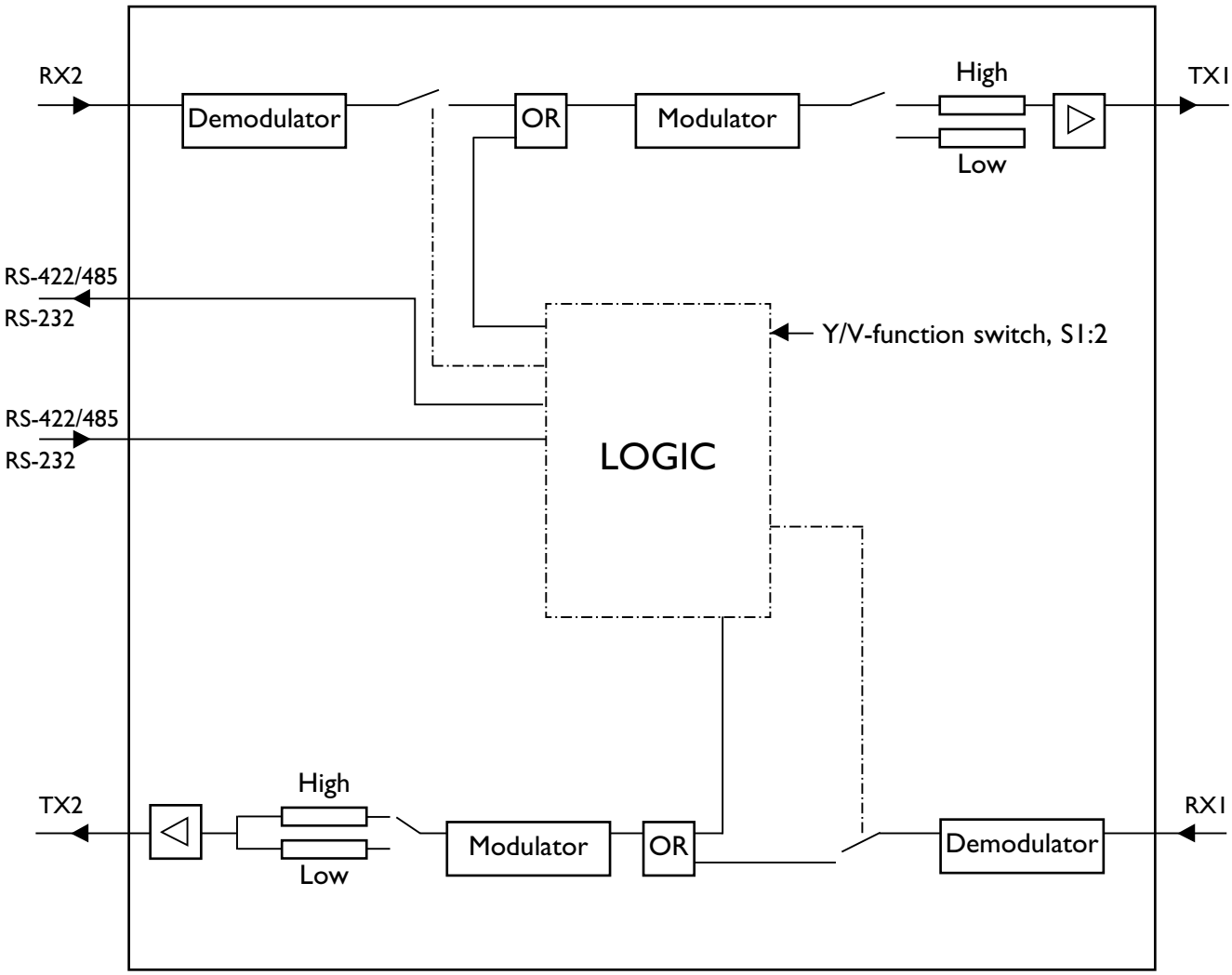
Remarque : Dans le cas ou un LD-63 se trouve à l'extrémité d'une connexion multipoints, avec une connexion fibre optique sur le canal 2, le Micro-interrupteur SW1 :2 doit être configuré sur le mode Y.

Connexions RS-232/V.24, RS-422, RS-485



*) **N.B** : Les définitions R+/R– et T+/T– ne sont pas standard. Dans certains cas, si le coupleur ne fonctionne pas, il est nécessaire d'inverser les points (T+ et T–) et/ou (R+ et R–). Ceci ne doit être réalisé que d'un seul côté.

Block diagram



Westermo Teleindustri AB • SE-640 40 Stora Sundby, Sweden
Phone +46 16 42 80 00 Fax +46 16 42 80 01
E-mail: info@westermo.se • Westermo Web site: www.westermo.se

Subsidiaries

Westermo Data Communications Ltd
Unit 14 Talisman Business Centre • Duncan Road
Park Gate, Southampton • SO31 7GA
Phone: +44(0)1489 580 585 • Fax.:+44(0)1489 580586
E-Mail: sales@westermo.co.uk • Web: www.westermo.co.uk

Westermo Data Communications GmbH
Goethestraße 67, 68753 Waghäusel
Tel.: +49(0)7254-95400-0 • Fax.:+49(0)7254-95400-9
E-Mail: info@westermo.de • Web: www.westermo.de

Westermo Data Communications S.A.R.L.
9 Chemin de Chilly 91160 CHAMPLAN
Tél : +33 1 69 10 21 00 • Fax : +33 1 69 10 21 01
E-mail : infos@westermo.fr • Site WEB: www.westermo.fr

Westermo Teleindustri AB have distributors in several countries, contact us for further information.

T03-0101 • 6072-2004 03.02 Mälartryck AB, Eskilstuna, Sweden